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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,327	07/18/2003	In Duk Song	2658-0307P	2517
2292	7590	09/02/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			WILCZEWSKI, MARY A	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/621,327

Applicant(s)

SONG, IN DUK

Examiner

Mary Wilczewski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. October 24, 2002.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to the amendment filed on June 23, 2004.

Claims 1-5 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 3-5 are again rejected under 35 U.S.C. 102(a, e) as being anticipated by US 2002/0074549 ("Park '549"), of record.

Park '549 teaches a method of fabricating a TFT that uses a diffracting mask (Fig. 31, paragraph 163) that is capable of exposing different portions of a photoresist to a differing degree and thereby producing a patterned photoresist having multiple thicknesses.

In Fig. 32A, Park '549 teaches forming on a substrate having a gate pad (24), a TFT (66), and a data pad (64) an inorganic layer (silicon nitride layer 70) followed by an organic layer (photoresist layer "PR"); the organic layer is exposed to a different degree at differing lateral portions of the device corresponding to the gate pad, TFT, and data

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pad regions; the inorganic layer is etched through the organic layer (Fig. 33A) to form contact holes (Fig. 35A and paragraph 166); and forming electrodes in the contact holes (Fig. 37A).

Claim 3: Park '549 teaches completely removing the photoresist after etching the inorganic layer (compare Figs. 21-22).

Claim 4: Park '549 teaches removing portions of the gate insulating layer corresponding to the gate pad (paragraph 166).

Claim 5: The electrodes are in contact with the remaining inorganic layer 70 (Fig. 37A).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is again rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0041394 ("Park '394") in view of US 2002/007549 ("Park '549"), both of record .

Park '394 teaches a photolithography system and method of making a TFT substrate (Figs. 24B, 25). Park '394 discloses forming a TFT (456), a gate pad (424), and a data pad (464); depositing an inorganic layer (430/470) and an organic insulating material (492/494); selectively patterning the organic insulating layer to produce regions having a first thickness (494) and a second thickness (492); selectively removing the inorganic material (430; Fig. 25); etching contact holes in the inorganic layer (430)

through the organic mask; and forming electrodes in the contact holes (Fig. 22). Park '394 teaches selectively removing parts of the photoresist (494) while etching the inorganic layer (470) to leave photoresist (492) in selected regions (Figs. 25-26).

The claimed invention differs from Park '394 by requiring the use of a diffracting mask to form the patterned organic insulating layer.

It would have been obvious to one of ordinary skill in the art to use a diffracting mask to pattern the photoresist in the known process of Park '394. One of ordinary skill in the art would have been motivated to use a diffracting mask because Park '549 teaches that diffracting masks are desirable for producing a multi-thickness patterned photoresist and Park '394 requires a multi-thickness patterned photoresist.

Response to Arguments

Applicant's arguments filed June 23, 2004, have been fully considered but they are not persuasive. Applicant has argued that Park '549 does not disclose using at a portion of the patterned organic insulating layer as a mask to define contact holes for the TFT, the gate pad, and the data pad, as recited. In paragraph 166, Park '549 clearly teaches removing the inorganic insulating layer 70 as well as removing a portion of gate insulating layer 40 corresponding to gate pad 24 using at least a portion of the patterned photoresist layer PR, see Figs. 32A and 33A and paragraph 166.

Applicant has also argued that Park '549 does not teach that diffracting masks are desirable to produce a multi-thickness photoresist. First, it is self-evident from the disclosure of Park '549 that diffracting masks are used to produce multi-thickness

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photoresist layers using a single exposure step. Second, Park '549 clearly teaches that the diffracting mask used in his method is capable of exposing different portions of a photoresist to a differing degree and thereby producing a patterned photoresist having multiple thicknesses, see paragraphs 156-165. Hence, it is maintained that Park '549 clearly teaches the desirability of using a diffracting mask to produce a patterned photoresist layer having multiple thicknesses.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (571) 272-1849. The examiner can normally be reached on Monday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



M. Wilczewski
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Tech Center 2800